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Title of the Invention: ATM LAN with High Reliability

Abstract of the Disclosure and the translation of the part referred to by the Examiner

An asynchronous transfer mode (abbreviated as "ATM") LAN is used in the field of plant watching and controlling system, which must be guaranteed to be free of malfunction. To meet the trouble-free requirement in this particular field the present invention provides an ATM LAN with high reliability comprising a defect detector 1, a redundancy data-transfer means 2, and a network setting means 3 (see Fig.1).

The defect detector 1 uses one pair-to-multi pair connection, watching virtual circuit (abbreviated as "VC") including all VCs via which application programs in terminals can effect required communications for detecting defects if any, on the VCs. When a defect detecting signal is sent to a selected terminal, the receiving terminal replies to the sending terminal via its one pair-to-multi pair connection, watching virtual circuit. The redundancy data-transfer means 2 is responsive to no response of confirmation being made from the receiving terminal for a predetermined time for resending same data via a selected stand-by VC. The network setting means 3 divides the network into a plurality of sub-networks, each having a representative node and common nodes. A PVC is set between representative nodes and between representative and common nodes, and every representative node has an appropriate internet protocol routing table. Also, the network setting means 3 gives the increasing or decreasing values of VC identifiers to the VCs in the rising or descending order.

[0015] Fig.2 shows a third ATM LAN construction according to the present invention. As shown, the sending terminal 1 uses its redundancy data-transfer means 2 to effect the first resending of data via the VC which is being used now. When the redundancy data-transfer means 2 of the receiving terminal 2 receives the data, it sends a response of confirmation to the sending terminal 1. The redundancy data-transfer means 2 of the sending terminal 1 uses a selected stand-by VC to resend the data, provided that no response of confirmation be received within a predetermined length of time. A plurality of stand-by VCs available to the redundancy data-transfer means 2 may be used one after another, or all together simultaneously. To prevent data from being

disordered in transmission the redundancy data-transfer means 2 of the sending terminal 1 numbers pieces of data to allow the receiving terminal to rearrange data in terms of the identifier numbers, discarding duplicate pieces of data. Normally data can be successfully sent by using the VC which is being used now, and then, the redundancy data-transfer means 2 of the sending terminal 1 can receive the response of confirmation from the receiving end. Thus, the resending of data is performed only once. If the VC which is being used now is defective, the redundancy data-transfer means 2 of the sending terminal 1 uses a selected stand-by VC to resend the data. In this case data transfer is delayed more or less, but no trouble is caused..